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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09.683,490	01/07/2002	Terence J. Murphy	TI-32876	2800

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TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS, TX 75265

EXAMINER

DOUGHERTY, THOMAS M

ART UNIT PAPER NUMBER

2834

DATE MAILED: 06/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/683,490

Applicant(s)

MURPHY, TERENCE J.

Examiner

Thomas M. Dougherty

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1 and 2 are rejected under 35 U.S.C. 102(e) as being anticipated by Yasuda et al. (US 6,525,446). Yasuda et al. show (fig. 8) an electrostatic actuator, comprising; a stationary element (101); an element (103) that is movable with respect to a reference position; a position sensor (109) arranged to produce an analog position indication signal (x) that indicates a position of said movable element (103); and a feedback circuit (110-113, 120, A₁-A₃, 107, 108) for moving said movable element (103), said feedback circuit having a signal linearizing circuit (120) to receive said analog position indication signal (x) of said position sensor and a driving circuit (A₁-A₃, 107, 108) to provide a linear position drive signal to said movable element (103).

Said reference position is a position of said stationary element (101).

Claims 1, 2, 7, 8, 11 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Scheurenbrand et al. (US 6,525,446). Scheurenbrand et al. show (fig. 1) an electrostatic actuator, comprising; a stationary element (2); an element (6) that is movable with respect to a reference position; a position sensor (K) arranged to produce an analog position indication signal (output of K) that indicates a position of said movable element (6); and a feedback circuit (R, U) for moving said movable element (6), said feedback circuit having a signal linearizing circuit (R) to receive said analog position indication signal (output of K) of said position sensor and a driving circuit (U) to provide a linear position drive signal to said movable element (6).

Said reference position is a position of said stationary element (2).

Scheurenbrand et al. show a method for operating an electrostatic actuator of the type having a first member (6) that is positionable with respect to a reference position in response to a drive voltage applied therebetween, comprising: sensing a position (K) of said first element (6) with respect to said reference location (location of 2); generating an analog position indicating signal (K) in response to said sensing a position; linearizing said analog position indicating signal (output of K) to generate a position drive signal (25) in response thereto; generating said drive voltage (25) in response to said position drive signal; and applying said drive voltage (25) to said first member (6) to modify a position of said member (6).

Said reference position is a position of a second member (2).

Scheurenbrand et al. show (fig. 1) an electrostatic actuator (1) having a first member (6) that is positionable with respect to a reference location in response to a drive voltage (25) applied between said first member (6) and a second member (2), comprising: means for sensing a position (K) of said first element (6) with respect to said reference location; means (R) for generating an analog position indicating signal and for generating a position drive signal in response thereto; means for generating said drive voltage (output of U) in response to said position drive signal; and means for applying said drive voltage (25) to said first member (6) to modify a position of said first member.

Said reference location is a location of said second member (2).

Claims 1, 2, 7, 8, 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Higuchi et al. (US 5,789,843). Higuchi et al. show (fig. 4) an electrostatic actuator, comprising; a stationary element (2); an element (10) that is movable with respect to a reference position; a position sensor (14-17) arranged to produce an analog position indication signal that indicates a position of said movable element (10); and a feedback circuit (18) for moving said movable element (10), said feedback circuit (18) having a signal linearizing circuit to receive said analog position indication signal of said position sensor (14-17) and a driving circuit (also 18) to provide a linear position drive signal to said movable element (10).

Said reference position is a position of said stationary element (2).

Higuchi et al. show a method for operating an electrostatic actuator of the type having a first member (10) that is positionable with respect to a reference position in

response to a drive voltage applied therebetween, comprising: sensing a position (via 14-17) of said first element (10) with respect to said reference location (location of 2); generating an analog position indicating signal (internal to 18) in response to said sensing a position (via 14-17); linearizing said analog position indicating signal to generate a position drive signal (internal to 18) in response thereto; generating said drive voltage (V1-V4) in response to said position drive signal; and applying said drive voltage (V1-V4) to said first member (10) to modify a position of said member (10).

Said reference position is a position of a second member (2).

Higuchi et al. show (fig. 4) an electrostatic actuator having a first member (10) that is positionable with respect to a reference location in response to a drive voltage (V1-V4) applied between said first member (10) and a second member (2), comprising: means for sensing a position (14-17) of said first element (10) with respect to said reference location; means (output of position sensors 14-17) for generating an analog position indicating signal and for generating a position drive signal (internal to 18) in response thereto (including target value); means for generating said drive voltage (output of 18) in response to said position drive signal; and means for applying said drive voltage (V1-V4) to said first member (10) to modify a position of said first member (10).

Said reference location is a location of said second member (2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-6, 9, 10, 13 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over any of Yasuda et al. (US 6,525,446), Scheurenbrand et al. (US 6,525,446) or Higuchi et al. (US 5,789,843) in view of the applicant's discussion of the circuitry at paragraph 25 of the disclosure. Given the inventions of any of Yasuda et al., Scheurenbrand et al., or Higuchi et al., none show a linearizing circuit that comprises an analog-to digital converter (ADC) to digitize said position indication signal, and a programmed digital signal processor (DSP) to produce a linear command signal output from said analog position indication signal; an analog-to digital converter (ADC) for receiving the analog position indicating signal to convert said analog position indicating signal to a digital position indicating signal; a digital signal processor (DSP) for receiving said digital position indicating signal, said DSP being programmed to convert the digital position indicating signal into a digital signal that is linearly proportional to the position of said movable member; a digital-to-analog converter (DAC) for receiving said digital signal that is linearly proportional to the position of said movable member for producing a linear analog positioning command; and a voltage amplifier for receiving said linear analog positioning command to produce a position voltage and for application to said movable member.

Further not shown is having the DSO additionally programmed to scale said digital position indicating signal in the production of said digital signal is linearly proportional to the position of said movable member.

Further not shown is linearizing of said analog position comprises digitizing said analog position indicating signal and performing said linearizing in a programmed DSP.

The applicant notes at paragraph 25 of the disclosure however that these circuit components which form the circuit "can be readily produced using available circuit and techniques and processes" which indicates that the circuit is known in the art.

It would have been obvious to one having ordinary skill in the art to employ the known circuit as cited by the Applicant in the device of any of Yasuda et al., Scheurenbrand et al., or Higuchi et al., at the time of their inventions in order to save design costs employed in their inventions.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The remaining prior art cited reads on some aspects of the claimed invention.

Direct inquiry concerning this action to Examiner Dougherty at (703) 308-1628.


tmd

June 24, 2003

